IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit 1791	: PATENT APPLICATION
Examiner Jeff H. Aftergut	:
In re application of	:
REN JUDKINS et al.	: METHOD AND APPARATUS FOR MAKING CELLULAR MATERIAL USING SLOW CURE
Serial No. 10/568,027	: ADHESIVES
Filed July 31, 2006	:
Confirmation No. 2945	:

DECLARATION OF JOHN RUPEL UNDER 37 C.F.R. § 1.132

I., John Rupel declare:

I received a degree in Mechanical Engineering in 1985 from Purdue University.

I have worked as an engineer in the window covering field for 20 years. From 1988 through 2001 I was employed by Springs Window Fashions Division as a research and development engineer. I was responsible for all textile-based window covering products. These products include pleated shades and cellular shades made of woven, knitted and non-woven materials which are adhesively bonded together to form a three dimensional structure. My responsibilities included selection of materials for making these products and the design of equipment used to make the products. From 2001 through 2004 I was an independent contractor performing research and development projects in the window covering field. From 2004 to the present I have been employed by Flexo Solutions LLC as Manager of Research and Development.

I have been responsible for the production process and equipment used by Flexo Solutions to make tabbed cellular products. One of my tasks was to select adhesives for these

products. I am a named inventor in nine United States patents in the field of window coverings as well as nine published United States patent applications. These patents and published applications are identified on Exhibit 1 attached. I am also a co-inventor in this application.

I have reviewed the above titled application as published under publication No. US 2007/0051456 A1, the amendment filed in this application dated February 5, 2010, the Office Action dated February 19, 2010 and the cited references U.S. Patent No. 4,732,630 to Schnebly, U.S. Patent Nos. 4,631,108 and 5,390,720 to Colson and U.S. Patent No. 4,838,972 to Daamen et al.

Claims 1-8 are pending in the application and define a method in which tubular material is wrapped on a collector having at least one curved portion and overlaying surfaces of the tubular material are bonded together on the collector. The adhesive does not fully cure while the material is on the collector, although the plies of tubular material are bonded or 'tacked' together. This enables the further steps of easily removing the material from the collector in a neat, 'registered' stack such that there is some curvature in the structure and placing that structure on a flat surface. There the structure is reshaped such that the curvature is flattened while the adhesive fully cures. The pending claims have been rejected under 35 U.S.C. § 103(a) based upon the combination of United States Patent No. 4,631,108 to Colson in view of United States Patent No. 4,838,972 to Daamen et al., United States Published Application No. 2002/0014296 to Corey and United States Patent No. 4,732,630 to Schnebly.

Colson '108 discloses a method of making a cellular structure in which a strip of elongated film material is wrapped on a collector. Figures 1, 12 and 13 show that the collector may have two, three or four flat surfaces with a curved surface between each adjacent flat surface. A glue applicator applies glue to the elongated film material as the material is applied to

the collector such that adjacent surfaces of the material will be bonded together. After many windings the material is cut from the collector. The material which has been applied to the flat surfaces is kept for use as a window covering. The material that is collected on the curved surfaces is discarded. There is no teaching or suggestion in Colson to use a slow cure adhesive or to remove a cellular structure having a curvature from the collector and place that structure on a flat surface where the adhesive fully cures and the curvature flattens. Further, Colson teaches against winding onto curved surfaces. At column 2, lines 52 – 55, he teaches "...continuously stacking the tubular film in layers on a flat surface or a plurality of flat surfaces to eliminate any curves that might cause wrinkles or warps in the finished product."

The process disclosed in the Colson '108 patent and the collector illustrated in Figure 1 of that patent have been used by Hunter Douglas for over 15 years. I have seen that process in operation. Hunter Douglas has used a variety of non-woven fabrics and a moisture cured polyurethane adhesive in this process. Hunter Douglas discards the material which has been wound on the curved portions of the collector. As a result as much as twenty percent of the fabric used in the process is scrapped. It was not obvious to Colson or anyone at Hunter Douglas that the material applied over curved portions of the collector could be reshaped or flattened and become usable through the use of a slow cure adhesive, removing the material from the collector before the adhesive fully cured and allowing the adhesive to cure while the structure was on a flat surface such that the curvature will flatten. Further, the process employed at Hunter Douglas requires the material remain on the collector for about 3 hours so it can go through a steam bath, fully curing the adhesive prior to removing the material from the collector. This is true even though Hunter Douglas has used a moisture cure polyurethane adhesive.

Daamen et al. disclose a machine for making filters from hollow material that is wrapped on a circular collector. Daamen was cited only to show that it was known to wind tubular material around a circular mandrel. Daamen also does not teach or suggest using a slow cure adhesive or to remove a cellular structure having a curvature from the collector and place that structure on a flat surface where the adhesive fully cures and the curvature flattens.

Schnebly discloses a method of making a cellular structure in which a strip of elongated material is wrapped on a collector. Figure 2 of this reference shows lines of adhesive being applied to the material before the material is wound on the wheel. Column 5, lines 28-32, say that the lines of adhesive are chilled "into a dry, solid, non-sticky state." This teaching means that when the material is wound on the rack and then removed from the rack, adjacent surfaces are NOT bonded together. This is critical to the process disclosed by Schnebly, particularly for removing defective layers in the stack prior to bonding (column 9, lines 32 – 35). When the material is wound on the wheel as shown in Figure 4 the layers are curved. The patent teaches to make a radial cut through the material on the wheel and lay the material on a flat surface. Because the opposing surfaces are not bonded to one another overlaying layers move relative to one another such that the resulting stack, when placed on a flat surface, is not curved but lays flat and is trapezoidal in shape as shown in Figure 7. Schnebly teaches that the stack must be oven cured to bond the layers of material together. This is shown in Figure 10 and described at column 9, line 61, through column 10, line 60. At column 10, lines 14- 24, the reference says that the temperature and pressure applied in the oven for a sufficient period of time "permit the lines of adhesive 18 between the layers 74 to activate and bond with each other so as to adhere adjacent layers of tubular materials 74 to each other." Schnebly does not teach how one can maintain a neat, 'registered' stack, from the time the material is cut from the collector until the

material is placed in the oven. One skilled in the art would know this would be extremely difficult to accomplish. To my knowledge the collector and process disclosed by Schnebly in this patent have never been commercialized.

Published Application No. 2002/0014296 to Corey discloses a method of making a fabric Venetian blind in which an elongated strip of material is helically wound around a pair of non-rotating spaced apart spars. The Examiner has cited paragraph 0083 of this published application as teaching the use of either a polyester or polyurethane adhesive in the making of a Venetian blind. He also says that this paragraph discloses the use of a slow cure adhesive material used in the process of making a Venetian blind. The Examiner then says, "One viewing the reference to Corey '296 would have been motivated to employ a moisture cure adhesive material in the process of Colson '108 as such would have enabled one to set the adhesive material without having to employ heat to cure the same and would have provided an adhesive material which was more flexible and provided greater bond strength than other hot melt adhesives."

I respectfully disagree with the Examiner's reading of Application No. 2002/0014296 to Corey. Paragraph 0083 specifically says, "hot melt adhesives are preferred," and then points out several advantages of this type of adhesive. The paragraph goes on to mention moisture-cure polyurethane hot applied glue but points out that the benefits of this adhesive, "must be considered in light of slower curing and associated bleed-through tendencies." One skilled in the art would read this sentence as a teaching away from using moisture cure adhesives because slow curing and bleed-through are considered to be undesirable. Bleed-through is a situation in which adhesive migrates through one or more layers of material resulting in several layers of material being bonded together. Slow curing extends the time for the material to fully set such that the material could shift causing mis-alignment of adjacent layers. Furthermore, even if one skilled

in the art was motivated by Corey to use a slow cure polyurethane adhesive there is still no teaching or suggestion that one should bond overlaying layers together on a curved surface of a collector, remove the material from the collector such that the cellular structure formed on the collector has some curvature, placing the structure on a flat surface and allowing the adhesive to fully cure such that the curvature in the structure flattens while the adhesive fully cures. This conclusion is confirmed by the experience of Hunter Douglas who used a moisture cure polyurethane adhesive and continued to discard structures formed on a curved surface of the collector.

The teachings of the cited references as a whole are that one can create a honeycomb structure by winding tubular material about a collector. If the material is wound on a collector having flat surfaces as in Colson one can bond the adjacent layers together but must discard the material that is bonded over a curved surface. Alternatively, one could use a heat activated adhesive and wind the material on a flat, round or curved wheel such that adjacent layers are not bonded together on the collector. Instead, the material is cut from the collector and placed in an oven to activate the adhesive as taught by Schnebly. There is no teaching or suggestion in the art to create a honeycomb by winding tubular material on a collector having curved surfaces using an adhesive that will partially cure while that material is on the collector to form a cellular structure having some curvature and that curvature will flatten after the material has been cut from the collector and placed on a flat surface while the adhesive fully cures.

For all of these reasons that method claimed in pending claims 1-8 of the above-identified application would not have been obvious to one skilled in the art.

The undersigned further declares that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true and further

that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing there from.

Dated: June 21, 2010

John Rupel

UNITED STATES PATENTS OF JOHN RUPEL

Patent No.	Title
7,273,529	Method of Making a Window Covering from Fabric Segments
6,767,615	Cellular Material Having Cells with Swirled Strands
6,673,176	Method of Manufacturing Window Covering with Artificial Creases
6,513,565	Light Controlling Cellular Shade and Method of Making Same
6,440,247	Light Control Window Covering and Method of Making Same
6,302,181	Window Covering with Artificial Creases and Method of Manufacturing Same
6,196,291	Light Control Window Covering and Method of Making Same
5,341,864	Adjustable Expandable and Collapsible Shade
5,207,257	Adjustable Expandable and Collapsible Shade

PUBLISHED UNITED STATES PATENT APPLICATIONS OF JOHN RUPEL

Published Application No.	Title
2008/0035269	Method of Making a Window Covering from Fabric Segments
2007/0044920	Machine for Making Collapsible Cellular Structure
2006/0174999	Expandable and Collapsible Window Covering and Methods for Making Same
2005/0224161	Method of Making a Window Covering from Fabric Segments
2005/0194092	Methods of Making Light Controlling Cellular Shades
2003/0234070	Expandable and Collapsible Window Covering and Methods for Making Same
2003/0075284	Methods of Making Light Controlling Cellular Shades
2002/0043347	Methods of Manufacturing Window Covering with Artificial Creases
2001/0001405	Light Control Window Covering and Method of Making Same